LOGICAL DEVICES, INC.

VERSION 2.0 REV A

IMPORTANT NOTICE

Every effort has been made to make the supplied documentation as accurate as possible, however, Logical Devices, Inc. will not assume responsibility for any damages incurred by such material. Logical Devices, Inc. reserves the right to changes in such material at any time.

PLEASE CHECK FOR CHANGE INFORMATION AT THE REAR OF THIS MANUAL.

BPM-1 BIPOLAR MODULE

Logical Devices, Inc.

1321 N.W. 65 Place

Ft. Lauderdale, Fl. 33309

BPM-1 PROM ADAPTER

The BPM-1 PROM adapter is a plug-in assembly to the PROMPRO-XP programmer. The adapter mounts on the SKT2 40 pin ZIF socket.

Care must be taken to insure the adapter is mounted staight and flush against the main unit and the ZIF socket. This is an important step as a poor adapter mounting could result in unpredicatable results.

It is also very important to always remember to shut the main unit off prior to inserting or removing the adapter. Ground the adapter to the main unit through the supplied ground wire. The ground wire protects the ground integrity in the event the adapter came loose.

ADAPTER INSTALLATION GUIDE

1- SHUT POWER OFF

2- REMOVE THE CNF PLUG (SMALL PLASTIC PART) FROM THE FRONT PANEL AND KEEP IN ERASER TRAY TO AVOID LOOSING.

3- REMOVE ZIFKEY FROM SKT2 SOCKET (THIS IS A SMALL PLASTIC INSERT SUPPLIED TO YOU TO LOCK THE ZIF SOCKET FROM ILLEGAL INSERTIONS)

4- ATTACH THE GROUND STRAP FOR THE ADAPTER TO GROUND POST IN FRONT OF THE MAIN UNIT

5- OPEN ZIF HANDLE BY MOVING TO UPRIGHT POSITION

6- MOUNT ADAPTER TO SIT FLUSH ON ZIF SOCKET

7- LOWER HANDLE FOR FIRM GRIP

8- TURN POWER ON

PROGRAMMING PROMS;

The BPM-1 adapter can program a variety of fusible link PROMs by several different manufacturers (see DEVICE DICTIONARY). The ZIF socket can accomodate most PROM packages from the 16 pin .3 centers to the 28 pin .6 centers. PROMs are inserted in the socket with the back side justified to the rear of the socket.

Using the PROM adapter the following commands are also applicable;

DEVICE SELECT
LOAD
PROGRAM
VERIFY
BLANK CHECK

All RAM editing and data transfer commands still apply. Refer to the PROMPRO-XP manual for details.

The device select procedure differs from the main unit (EPROMs) device selection. When the device select key is activated PROMPRO-XP returns with a four digit device code. To change, simply type a new four digit device code. A four digit device code is required because there are a very large number of different PROMs on the market.

Never try to program or read a PROM that is not listed on the device dictionary.

EXAMPLE FOR PROGRAMMING BIPOLAR PROMS

Below is a step by step description for programming one of the more complicated bipolar proms using the PROMPRO-XP BPM-1 bipolar adaptor module. The prom used in this description was selected because of it's special initialized feature, so as to allow the user to become familiar with all the functions available with the adapter module.

Most of the PROMPRO-XP functions remain the same as described in the PROMPRO-XP main unit user's manual. Below is a list of the functions that may change when the BPM-1 adapter module is inserted.

USER FUNCTION	INTERNAL FUNCTIONS
1. DEVICE SELECT	1. POWER UP
2. LOAD	2. INITIALIZATION
3. PROGRAM	3. RAM ACCESS
4. VERIFY	4. SKT1/2 ACTIVITY
5. BLANK CHECK	

START UP AND INSTALLATION:

First install the adapter module as described in the ADAPTER INSTALLATION GUIDE. You should now observe the "*" on the keypad display indicating the PROMPRO-XP is in the command mode.

SELECT PROM TYPE:

To select the prom type press the DEVICE button on the keypad or the "S" key if using a terminal. The PROMPRO-XP will respond with a four digit device code. Refer to the BIPOLAR DEVICE DICTIONARY to select the proper code for the prom you wish to program. In this example we are using the prom type MMI 63RS881.

This particular prom is a 1k by 8 bit registered type with 16 initialize words, this means that there is another 16 byte array independent of the main array which is accessed through the initialize pin (see MONOLITHIC MEMORIES bipolar databook for more details). To select the main fuse array enter the first four digit code listed in the table under MMI 63RS881 "AA39". After entering the fourth digit you will notice the sound of a relay and the green LED under the 28 pin socket will light. The programmer has now configured itself to the pinout and electrical specifications of the selected prom. If you use the range command you will notice that the range has been set to 0000-03FF which is the full range of a 1k prom.

LOADING DATA INTO RAM:

To load data from a master prom of the same type into ram, first lift the ZIF handle on the indicated socket and place the master pron into the socket with pin one to the lower right. You will notice that the socket has 28 pins and the prom has only 24, in this case you must insert the prom closest to the rear of the ZIF socket. Once the prom is inserted, press the ZIF handle down to lock the prom firmly in place.

Press the LOAD button on the keypad or the "L" key if using a terminal to load the data contained in the prom into the programmer's internal ram. The PROMPRO-XP will display the message "LOADING" while the data is being transferred to the programmers internal ram buffer.

COPY RAM TO PROM:

To program the data contained in the programmers internal ram into the prom, insert an unprogrammed prom into the indicated socket as above. You may use the BLNKCK command to check the integrity of the inserted prom. To start the program cycle, press the PROG key or the "P" key if using a terminal. The PROMPRO-XP will display the message "PROGRAM" while comparing the ram data to the prom data to assure that all fuses that are to be left unprogrammed are intact. If this cycle is complete without error the PROMPRO-XP will display the message "COPY". This is the time at which the fuses are actually being programmed. After the copy cycle is complete the PROMPRO-XP will display the message "VERIFY" and checks every bit at Vcc high and Vcc low levels to assure that all low bits are below .7 volts and all high bits are above 2.5 volts.

PROGRAMMING THE INITIALIZE WORDS:

To access the second array (i.e. the initialize words) within the prom you must change the device code.

Using the device select command as described above enter the second code listed under MMI 63RS881 "A4B9". If you check the range now (using range command) you will notice the range has changed to 0000-000F which is the full range for 16 bytes. Enter the desired data pattern into the programmers internal ram buffer locations 0000-000F. Using the BLNKCK command you may check the integrity of initialize array to assure that all fuses are intact.

Press the PROGRAM key to initiate the program cycle as described above and program the initialize array the same as you would the main fuse array.

COMMAND MESSAGES

LOADING — Load the contents of the prom (within the range selected) into the ram (at the address indicated by the page offset selected).

TESTING — The message "TESTING" is initiated by the BLANK CHECK command, and indicates that the programmer is testing the prom to assure that all links are intact. If the programmer detects a programmed link, an error message will be displayed (see NB aaaa) indicating the address of the programmed link. If the test is sucessful the message "BLANK" will be displayed.

BLANK

VERIFY — The message "VERIFY" is displayed when either the verify command is issued or automatically after the programming sequence is complete.

VERIFY compares the ram data to the prom data at VCC low and high levels, and tests each bit to assure that all low bits are below .7 volts and all high bits are above 2.5 volts. This function may be used to detect marginally programmed devices.

KEYPAD OPERATION:

If any bits fail to verify the message "FAILaaaa" will be displayed on the keypad (where "aaaa" is the address that the failed bit was detected). Press the "NEXT" key to continue verifying and display the next failed location.

TERMINAL OPERATION:

If a terminal was used to initiate the command a list of failed locations will be displayed up to 12. Press the space bar to continue listing failed locations, or the return key to quit.

PROGRAM

When the PROGRAM command is issued, the message is displayed while the programmer is testing the ram/prom for any illegal bits (see IB aaaa). Upon completion of the bit test the copy cycle is initiated, indicated by the message "COPYING"

COPYING

It is during the copy cycle that the prom fuse links are actually being programmed. If an error occures during thistime the PF error will be displayed (see PF aaaa). Upon sucessful competion of the copy cycle the VERIFY cycle will be initiated.

DVC=nnnn

The DEVICE SELECT command allows the user to enter the device code of the desired prom. The device codes are listed in the BIPOLAR DEVICE SELECT DICTIONARY.

After the device code is entered, one of the green LED's on the bipolar module will light indicating the proper ZIF socket to use for the device type selected.

To cancel the device select command at any time before entering all four digits, press the "EXIT" key if useing the key pad or the "RETURN" key if using a terminal.

Some registered proms have a second four digit code listed. This code is used to program the INITIALIZE or CLEAR words described in the manufacturers specifications. To program the INITIALIZE words, enter the second code listed (eg. MMI 63RS881 enter A4B9) in the device select dictionary, then enter the desired data pattern into memory just as if you were programming the standard prom array.

OVC MOD — OVC MOD means that an over current condition occured on the bipolar module upon power up or reset. If an over current condition is detected by the PROMPRO-XP main unit while trying to power up the bipolar module, the power to the module is immediatly turned off and the OVC MOD error message is displayed. If this error occurs, turn the power switch off and check the integrity of the SKT-2 zif socket connection to the bipolar module.

BUSERR — This error message may occur upon power-up or whenever the reset button is pressed. BUSERR is an indication that something is wrong with the bipolar module internal bus. If this error occurs, turn the power switch off and check the connector (located on the under side of the bipolar module) for proper instalation or any bent or broken pins.

MSKT0000 — The MSKT0000 error indicates that the prom inserted in the module zif socket may be inserted improperly. Check the prom for proper oreintation in the zif socket.

NB aaaa — NB indicates a non blank condition. This message will be displayed when the BLANK check command is issued. The "aaaa" is the four digit hex address at which the first non blank bit was detected.

PF aaaa — PF (PROGRAM FAILURE) indicates that the programmer internal circuitry was unable to blow the fuse link at the address "aaaa". The particular bit that failed to program can be found by comparing the ram data to the prom data at the failed address. NO FURTHER ATTEMPT SHOULD BE MADE TO PROGRAM THAT BIT.

IB aaaa — IB (ILLEGAL BIT) error indicates that the ram contains a bit which is to remain unprogrammed, is already programmed in the prom. The address of the illegal bit is indicated by the "aaaa" in the error message.

VC aaaa — OVC (OVER CURRENT) indicates that an over current condition occured while trying to program a bit at the hex address "aaaa". If this error occurs, check the device code selected and make sure that the prom is inserted in the proper zif socket.

NOTES: NEVER REMOVE MODULE WITH POWER ON.

aaaa = FOUR DIGIT HEX ADDRESS SELECTED AT THE TIME THE ERROR OCCURED.

NOTES:

All commands are range oriented. (see RANGE command)

A socket test is executed before all commands.

If an error occures the message will remain on the key pad display, press the exit key to return to the prompt.

Any command which was initiated by the key pad may canceled by pressing the "EXIT" key.

BIPOLAR DEVICE SELECT DICTIONARY
(for auto configurator)

TI 14/18 SERIES

PROM TYPE	SIZE	DEVICE CODE
TBP18S030	32 X 8	0500 ----
TBP18SA030	32 X 8	0500 ----
TBP14S10	256 X 4	1808 ----
TBP14SA10	256 X 4	1808 ----
TBP18S22	256 X 8	0828 ----
TBP18SA22	256 X 8	0828 ----
TBP18S42	512 X 8	0929 ----
TBP18SA42	512 X 8	0929 ----
TBP18S46	512 X 8	0931 ----
TBP18SA46	512 X 8	0931 ----

TI 24/28 SERIES

PROM TYPE	SIZE	DEVICE CODE
TBP24S10	256 X 4	3808 ----
TBP24SA10	256 X 4	3808 ----
TBP28L22	256 X 8	2828 ----
TBP28L42	512 X 8	2929 ----
TBP28P42	512 X 8	2929 ----
TBP28S42	512 X 8	2929 ----
TBP28SA42	512 X 8	2929 ----
TBP24S41	1K X 4	3A10 ----
TBP24SA41	1K X 4	3A10 ----
TBP24S81	2K X 4	3B18 ----
TBP24SA81	2K X 4	3B18 ----

TI24/28 SERIES cont'd

PROM TYPE	SIZE	DEVICE	CODE
TBP28L45	512 X 8	2931	----
TBP28P45	512 X 8	2931	----
TBP28R45	512 X 8	293A	----
TBP28S45	512 X 8	2931	----
TBP28L86	1K X 8	2A31	----
TBP28S86	1K X 8	2A31	----
TBP28SA86	1K X 8	2A31	----
TBP28S27Ø8	1K X 8	2A3Ø	----
TBP28L85	1K X 8	2A31	----
TBP28P85	1K X 8	2A33	----
TBP28R85	1K X 8	2A3A	----
TBP28S85	1K X 8	2A31	----
TBP28L166	2K X 8	2B3Ø	----
TBP28P166	2K X 8	2B3Ø	----
TBP28R166	2K X 8	2B3B	----
TBP28S166	2K X 8	2B3Ø	----

SIGNETICS GENERIC I SERIES

PROM TYPE	SIZE	DEVICE CODE
82S23	32 X 8	4500 ----
82S23A	32 X 8	4500 ----
82S123	32 X 8	4500 ----
82S123A	32 X 8	4500 ----
82S126	256 X 4	5808 ----
82S126A	256 X 4	5808 ----
82S129	256 X 4	5808 ----
82S129A	256 X 4	5808 ----
82S130	512 X 4	5909 ----
82S130A	512 X 4	5909 ----
82S131	512 X 4	5909 ----
82S131A	512 X 4	5909 ----
82LS135	256 X 8	4828 ----
82S135	256 X 8	4828 ----
82S137	1K X 4	5A10 ----
82HS137	1K X 4	5A10 ----
82S137A	1K X 4	5A10 ----
82HS137A	1K X 4	5A10 ----
82S137B	1K X 4	5A10 ----
82S140	512 X 8	4931 ----
82S141	512 X 8	4931 ----
82S147	512 X 8	4929 ----
82HS147	512 X 8	4929 ----
82S147A	512 X 8	4929 ----

SIGNETICS GENERIC I SERIES cont'd

PROM TYPE	SIZE	DEVICE	CODE
82LS180A	1K X 8	4A31	----
82LS180B	1K X 8	4A31	----
82S180	1K X 8	4A31	----
82HS181	1K X 8	4A31	----
82HS181A	1K X 8	4A31	----
82LS181	1K X 8	4A31	----
82LS181A	1K X 8	4A31	----
82LS181B	1K X 8	4A31	----
82S181	1K X 8	4A31	----
82S181A	1K X 8	4A31	----
82S181B	1K X 8	4A31	----
82S183	1K X 8	4A3A	----
82HS185	2K X 4	5B12	----
82HS185A	2K X 4	5B12	----
82S185	2K X 4	5B12	----
82S185A	2K X 4	5B12	----
82S185B	2K X 4	5B12	----
82S2708	1K X 8	4A30	----
82HS191	2K X 8	4B30	----
82S191	2K X 8	4B30	----
82S191A	2K X 8	4B30	----
82S191B	2K X 8	4B30	----
82S321	4K X 8	4C30	----

SIGNETICS GENERIC II SERIES

PROM TYPE	SIZE	DEVICE CODE
82HS195	4K X 4	7C20 ----
82HS321	4K X 8	6C30 ----
82HS641	8K X 8	6D30 ----

HARRIS NiCr PROMS

PROM TYPE	SIZE	DEVICE CODE
HM7602	32 X 8	8500 ----
HM7603	32 X 8	8500 ----
HM7610	256 X 4	9808 ----
HM7610A	256 X 4	9808 ----
HM7610B	256 X 4	9808 ----
HM7611	256 X 4	9808 ----
HM7611A	256 X 4	9808 ----
HM7611B	256 X 4	9808 ----
HM7620	512 X 4	9909 ----
HM7620A	512 X 4	9909 ----
HM7620B	512 X 4	9909 ----
HM7621	512 X 4	9909 ----
HM7621A	512 X 4	9909 ----
HM7621B	512 X 4	9909 ----
HM7640	512 X 8	8931 ----
HM7640A	512 X 8	8931 ----
HM7641	512 X 8	8931 ----
HM7641A	512 X 8	8931 ----
HM7642	1K X 4	9A10 ----

HARRIS NiCr PROMS

PROM TYPE	SIZE	DEVICE CODE
HM7642A	1K X 4	9A1Ø ----
HM7642B	1K X 4	9A1Ø ----
HM7643	1K X 4	9A1Ø ----
HM7643A	1K X 4	9A1Ø ----
HM7649	512 X 8	8929 ----
HM7649A	512 X 8	8929 ----
HM7681	1K X 8	8A31 ----
HM7681A	1K X 8	8A31 ----
HM7685	2K X 4	9B12 ----
HM7685A	2K X 4	9B12 ----
HM76161	2K X 8	8B3Ø ----
HM76161A	2K X 8	8B3Ø ----
HM76161B	2K X 8	8B3Ø ----
HM76165	4K X 4	9C2Ø ----
HM76321	4K X 8	8C3Ø ----
HM76641	8K X 8	8D3Ø ----
HM76641A	8K X 8	8D3Ø ----

HARRIS CMOS PROMS

PROM TYPE	SIZE	DEVICE CODE
HM6616	2K X 8	EB7B ----

MMI Ti-W SERIES PROM

PROM TYPE	SIZE	DEVICE	CODE
63S080	32 X 8	A500	----
63S081	32 X 8	A500	----
63S081A	32 X 8	A500	----
63S140	256 X 4	B808	----
63S141	256 X 4	B808	----
63S240	512 X 4	B909	----
63S241	512 X 4	B909	----
63RA441	1K X 4	BA11	----
63S441	1K X 4	BA10	----
63S441A	1K X 4	BA10	----
63S841	2K X 4	BB12	----
63S841A	2K X 4	BB12	----
63RS881	1K X 8	AA39	A4B9
63RS881A	1K X 8	AA39	A4B9
63S1641	4K X 4	BC20	----
63S1641A	4K X 4	BC20	----
63S1681	2K X 8	AB30	----
63S1681A	2K X 8	AB30	----
63S3281	4K X 8	AC30	----
63S3281A	4K X 8	AC30	----

NATIONAL Ti-W PROMS

PROM TYPE	SIZE	DEVICE	CODE
DM74S188	32 X 8	C500	----
DM74S288	32 X 8	C500	----
DM74S287	256 X 4	D808	----
DM74S387	256 X 4	D808	----
DM74S570	512 X 4	D909	----
DM74S570A	512 X 4	D909	----
DM74S571	512 X 4	D909	----
DM74S571A	512 X 4	D909	----
DM74S571B	512 X 4	D909	----
DM74LS471	256 X 8	C828	----
DM74S472	512 X 8	C929	----
DM74S472A	512 X 8	C929	----
DM74S472B	512 X 8	C929	----
DM74S473	512 X 8	C929	----
DM74S473A	512 X 8	C929	----
DM74S474	512 X 8	C931	----
DM74S474A	512 X 8	C931	----
DM74S474B	512 X 8	C931	----
DM74S475	512 X 8	C931	----
DM74S475A	512 X 8	C931	----
DM87SR474	512 X 8	C939	C0B9
DM87SR474B	512 X 8	C939	C0B9

NATIONAL Ti-W PROMS cont'd

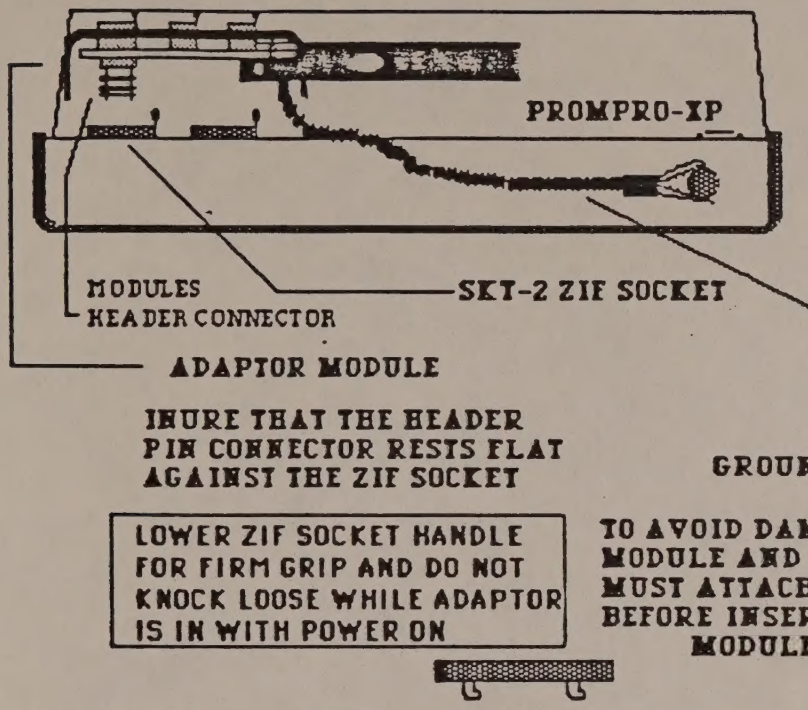
PROM TYPE	SIZE	DEVICE	CODE
DM87SR25	512 X 8	C939	CØB9
DM87SR25B	512 X 8	C939	CØB9
DM87SR476	512 X 8	C939	CØB9
DM87SR476B	512 X 8	C939	CØB9
DM74S572	1K X 4	DA1Ø	----
DM74S572A	1K X 4	DA1Ø	----
DM74S573	1K X 4	DA1Ø	----
DM74S573A	1K X 4	DA1Ø	----
DM74S573B	1K X 4	DA1Ø	----
DM87S18Ø	1K X 8	CA31	----
DM87LS181	1K X 8	CA31	----
DM87S181	1K X 8	CA31	----
DM87S181A	1K X 8	CA31	----
DM87SR181	1K X 8	CA39	CØB9
DM87S28Ø	1K X 8	CA31	----
DM87S281	1K X 8	CA31	----
DM87S281A	1K X 8	CA31	----
DM87S184	2K X 4	DB12	----
DM87S185	2K X 4	DB12	----
DM87S185A	2K X 4	DB12	----
DM87S185B	2K X 4	DB12	----
DM87S19Ø	2K X 8	CB3Ø	----
DM87S190A	2K X 8	CB3Ø	----
DM87S190B	2K X 8	CB3Ø	----

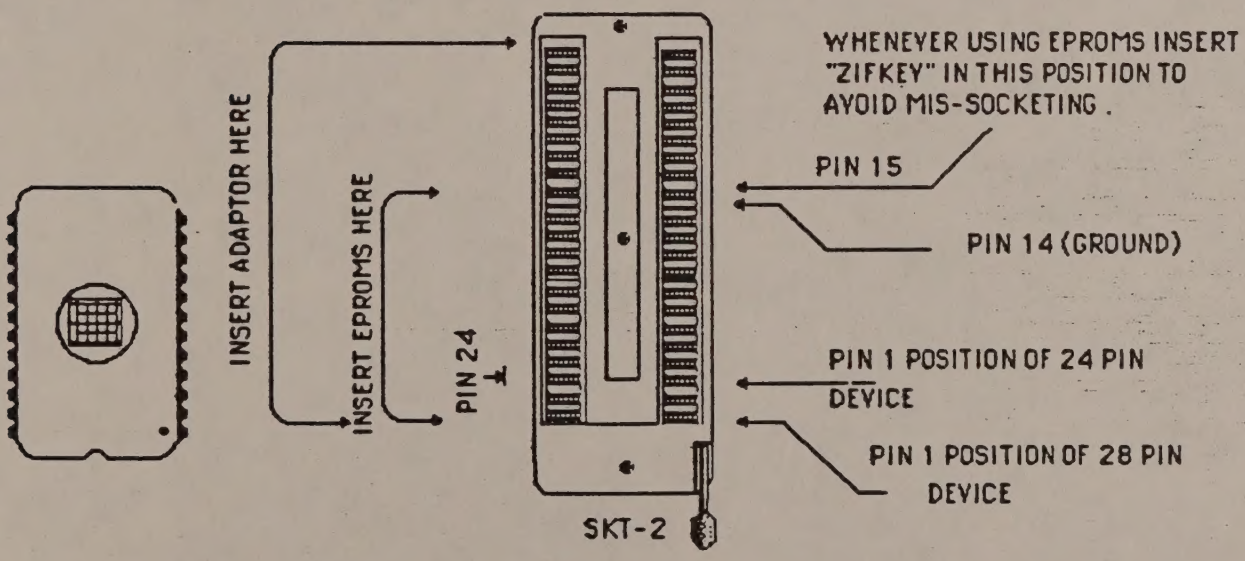
NATIONAL Ti-W PROMS cont'd

PROM TYPE	SIZE	DEVICE	CODE
DM87SR25	512 X 8	C939	CØB9
DM87SR25B	512 X 8	C939	CØB9
DM87SR476	512 X 8	C939	CØB9
DM87SR476B	512 X 8	C939	CØB9
DM74S572	1K X 4	DA1Ø	----
DM74S572A	1K X 4	DA1Ø	----
DM74S573	1K X 4	DA1Ø	----
DM74S573A	1K X 4	DA1Ø	----
DM74S573B	1K X 4	DA1Ø	----
DM87S18Ø	1K X 8	CA31	----
DM87LS181	1K X 8	CA31	----
DM87S181	1K X 8	CA31	----
DM87S181A	1K X 8	CA31	----
DM87SR181	1K X 8	CA39	CØB9
DM87S28Ø	1K X 8	CA31	----
DM87S281	1K X 8	CA31	----
DM87S281A	1K X 8	CA31	----
DM87S184	2K X 4	DB12	----
DM87S185	2K X 4	DB12	----
DM87S185A	2K X 4	DB12	----
DM87S185B	2K X 4	DB12	----
DM87S19Ø	2K X 8	CB3Ø	----
DM87S190A	2K X 8	CB3Ø	----
DM87S190B	2K X 8	CB3Ø	----

NATIONAL Ti-W PROMS cont'd

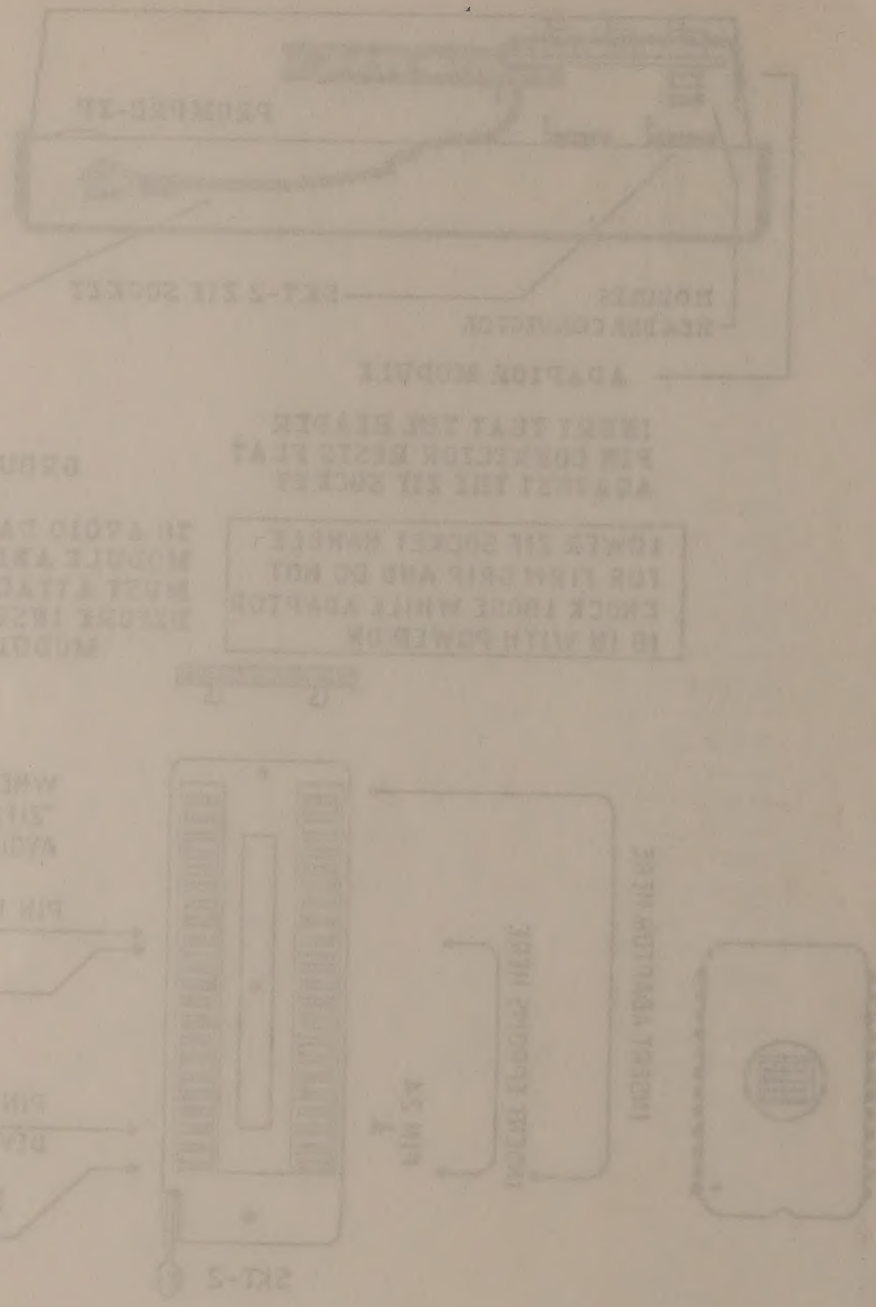
PROM TYPE	SIZE	DEVICE CODE
DM87S191	2K X 8	CB30 ----
DM87S191A	2K X 8	CB30 ----
DM87S191B	2K X 8	CB30 ----
DM87S290	2K X 8	CB30 ----
DM87S290A	2K X 8	CB30 ----
DM87S290B	2K X 8	CB30 ----
DM87S291	2K X 8	CB30 ----
DM87S291A	2K X 8	CB30 ----
DM87S291B	2K X 8	CB30 ----
DM87S195A	4K X 4	DC20 ----
DM87S195B	4K X 4	DC20 ----
DM87S321	4K X 8	CC30 ----
DM87S321A	4K X 8	CC30 ----
DM87S421	4K X 8	CC30 ----
DM87S421A	4K X 8	CC30 ----





CAUTION

WHEN EVER USING ADAPTOR FOR PALS OR BIPOLAR PROMS ATTACH GROUND CORD TO XP CHASSI FIRST.



CAUTION

WHENEVER USING ADAPTOR FOR PALS
OR HIPOLAR PROMS ATTACH GROUND
CORD TO XP CHASSI FIRST.